

TE5GN-C
CURVE TRACER

1. GENERAL. This procurement requires a general purpose, solid-state curve tracer.

2. CLASSIFICATION. Type II, Class 5, Style E, and Color R in accordance with MIL-T-28800 for shipboard applications.

3. OPERATIONAL REQUIREMENTS. The equipment shall be capable of providing voltages, currents, and CRT displays as specified below.

3.1 Collector supply modes. AC (line frequency), positive full-wave rectified, negative full-wave rectified, positive dc, and negative dc.

3.2 Voltage. The voltage shall be variable to the maximum peak volts selected, and the continuous and peak current shall be in accordance with table I.

Table I. Maximum Peak Current.

	Max Peak Volts, Open Circuit				
	<u>6.5V</u>	<u>25V</u>	<u>100V</u>	<u>400V</u>	<u>1600V</u>
Continuous Current	10A	2.5A	0.6A	0.15A	0.04A
Pulse Current	20A	5A	1.25A	0.30A	0.08A

3.3 Series resistance. Series resistances shall be provided to maintain maximum peak power to the device under test when changing voltage ranges.

3.4 Step generator.

3.4.1 Current mode range. 50 nA/step to 200 mA/step. A X0.1 control shall be provided to extend the range.

3.4.2 Voltage mode range. 50 mV/step to 2 V/step. A X0.1 control shall be provided to extend the range.

3.4.3 Accuracy. $\pm 4\%$ of full scale.

3.4.4 Step rate. 1X, 2X, or 4X line frequency.

3.4.5 Pulsed steps. Pulsed steps of approximately 300 μ s shall be provided.

3.4.6 Step and offset polarity. The equipment shall be provided with a control to invert the polarity of the step generator output.

3.4.7 Offset. The equipment shall be provided with a means of continuously offsetting a set of steps to either ADD or OPPOSE. The maximum range of the offset shall be 10 full amplitude steps.

3.4.8 Step family. The step family shall be repetitive or single family.

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3.4.9 Number of steps. 1 to 10 full amplitude steps and up to approximately 95 steps when using the STEP X0.1 multiplier.

3.5 Deflection controls.

3.5.1 Display accuracies. The display accuracy shall be a percentage of the highest on-screen value as specified in table II.

Table II. Display Accuracy.

<u>Display Mode</u>	<u>Normal</u>	<u>Magnified</u>
Vertical Collector Current	3% \pm 1 nA	4% \pm 1 nA
Horizontal Collector Volts	3%	4%
Horizontal Base Volts	3%	4%
Horizontal Step Generator	4%	5%

3.5.2 Vertical deflection factor. 2 nA/div to 2 A/div. A X10 magnifier shall be provided.

3.5.3 Horizontal deflection factor.

- Collector volts: 50 mV/div to 200 V/div. A X10 magnifier shall be provided.
- Base volts: 50 mV/div to 2 V/div. A X10 magnifier shall be provided.
- Step generator: 1 step/div. A X10 magnifier shall be provided.

3.5.4 Automatic positioning. The equipment shall be provided with a means of automatically positioning the trace (or spot) when the collector supply polarity is changed from the test fixture.

3.5.5 Display invert. The equipment shall be provided with a control capable of inverting the display and repositioning the trace.

3.5.6 Display filter. The equipment shall be provided with a selectable, low-pass filter to reduce vertical noise for high sensitivity measurements.

3.6 Standard test fixture. The equipment shall be provided with a test fixture with the following outputs and capabilities:

- Comparison test.
- A variable -12 to +12 Vdc bias supply output.
- External front panel jacks permitting access to the step generator output and the device under test base and emitter.

3.7 CRT.

3.7.1 CRT controls. Intensity, focus, trace rotation, and beam finder.

3.7.2 CRT dimensions. Rectangular with an 8 x 10 division display area.

4. GENERAL REQUIREMENTS.

4.1 Power source. MIL-T-28800 nominal power source requirements are invoked. Operation at 400 Hz is not required. Maximum power consumption: 155W.

4.2 Weight. 24 kg (53 lb) maximum.

4.3 Lithium batteries. Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.

4.4 Accessories. The following accessories shall be provided with the equipment:

- a. Transistor adapter for bipolar transistor and MOS FETs.
- b. Axial lead diode adapter with Kelvin sensing terminals.
- c. Protective shield for test connection area.